Project Risk Level Determination Guidance

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California Department of Transportation
Division of Design
Office of Storm Water Management
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Sacramento, California

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LIST OF ACRONYMS

ASTM	American Society for Testing and Materials
BMPs	Best Management Practices
CGP	Construction General Permit
DEA	Division of Environmental Analysis
DSA	Disturbed Soil Area
CWA	Clean Water Act
EPA	Environmental Protection Agency
GIS	Geographic Information System
HOV	High-occupancy vehicle
long/lat	Longitude/Latitude
MS4	Municipal separate storm sewer system
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSWM	Office of Storm Water Management
PA/ED	Project Approval/Environmental Document
PE	Project Engineer
PID	Project Information Document
PRDs	Permit Registration Documents
RL	Risk Level
RWQCB	Regional Water Quality Control Board
RUSLE	Revised Universal Soil Loss Equation
SMARTS	Stormwater Multi-Application and Reporting System (This system is not available at this time and is referenced in this document to show how it will be used in the future.)
SWDR	Storm Water Data Report
SWRCB	State Water Resources Control Board
TDC	Targeted Design Constituents
TMDLs	Total Maximum Daily Loads
WQPT	Water Quality Planning Tool

1. INTRODUCTION

1.1. *OVERVIEW*

The new Construction General Permit (CGP) (State Water Board Order 2009-0009-DWQ) goes into effect on July 1, 2010. The CGP is a risk-based permit that establishes three levels of environmental risk possible for a construction site.

The Risk Level (RL) is calculated in two parts: 1) Project Sediment Risk, and 2) Receiving Water Risk. Caltrans Project Engineers and Consultants should use this guidance to determine if a project has a Risk Level 1, 2 or 3. The CGP Risk Level (RL) determination quantifies sediment and receiving water characteristics and uses these results to determine the project's overall RL. Highly erodible soils, in higher rainfall areas, on steep slopes increase the 'sediment risk'.

Monitoring and reporting requirements increase as the RL goes from 1 to 3.

1.2. *SEDIMENT RISK*

The sediment risk is determined by using the Revised Universal Soil Loss Equation (RUSLE) to obtain sheet and rill erosion expressed in tons/acre

- Low Sediment Risk: < 15 tons/acre
- Medium Sediment Risk: >=15 and <75 tons/acre
- High Sediment Risk: >= 75 tons/acre

Inputs to the RUSLE equation are based on the following:

- location of the site
- construction work window
- top soil layer of the site
- "non-vegetated"/bare ground condition of the site (e.g., lengths and slopes), and
- disturbed soil areas only

1.3. *RECEIVING WATER RISK*

Receiving water risk is either high or low. Receiving water risk is based on whether a project drains to a sediment-sensitive waterbody. A sediment-sensitive waterbody is either on the most recent 303d list for waterbodies impaired for sediment; has a USEPA-approved Total Maximum Daily Load implementation plan for sediment; **or** has the beneficial uses of COLD, SPAWN, and MIGRATORY. A project that meets at least one of the three criteria has a high receiving water risk.

1.4. *TYPES OF PROJECTS BEING CONSIDERED FOR RISK LEVEL DETERMINATION*

There are two types of highway projects that are considered in this guidance:

- Contiguous Linear Highway Construction Site Projects
- Multiple (non-contiguous) Construction Sites within a Project. This type of project is usually not a Common Plan of Development (refer to PPDG, Appendix G for definition).

For each type of project the State Water Resources Control Board (SWRCB) allows two different methods when using the Risk Determination Excel spreadsheet from Appendix 1 of CGP:

- **GIS Map Method** (EPA Rainfall Erosivity Calculator & GIS map),
- **Individual Method** (EPA Rainfall Erosivity Calculator & Individual Data).

Both of these methods are explained in detail in this guidance.

1.5. *DEFINITIONS THE PE SHOULD UNDERSTAND*

Connecting directly or indirectly to a water body – A direct discharge means a discharge of surface runoff directly to the surface water body without first flowing through a municipal separate storm sewer system (MS4). An indirect discharge means the discharge of surface runoff to the surface water body through an MS4 stormwater conveyance system, unlisted tributary to the surface water, or a stormwater discharge that otherwise reaches the water body.

Tributary Rule - There are some ambiguities regarding connecting waterbody downstream.

1. Question - If there are a couple of creeks in the immediate downstream area of the project site which are not listed as the 303 (d) waterbody but they are connecting to another creek or river more than a mile or two downstream that is impaired for sediment, how is this considered in risk assessment? This can result to classification of the project to risk level 3 and subject the project to more monitoring and reporting requirements. Answer – Consult with District/Design Stormwater Coordinator for logical tributary boundaries in regards to waterbody impairment for sediment.
2. Question - Is there a distance threshold or guideline for consideration of any downstream adjoining waterbody? Answer – No. Consult with District/Design Stormwater Coordinator.

1.6. *PLANNING WATERSHEDS*

As many Caltrans projects are linear in nature, there is a reference in the CGP that needs to be considered. Section VIII Risk Determination of CGP Order states, "For any site that spans two or more planning watersheds, (watersheds that range in size from 3,000 to 10,000 acres as defined by Calwater watershed documents

http://cain.ice.ucdavis.edu/calwater/calwfaq.html) the discharger shall calculate a separate Risk Level for each planning watershed. The discharger shall notify the State Water Board of the site's Risk Level determination(s) and shall include this determination as a part of submitting the PRDs. If a discharger ends up with more than one Risk Level determination, the Regional Water Board may choose to break the project into separate levels of implementation."

This means that when evaluating your Risk Level within a project, you must be cognizant of where your project is in relation to separate planning level watersheds. More information is provided within this guidance.

Not all watersheds have been mapped to the planning watershed level. The watersheds shown on the Water Quality Planning Tool (WQPT) and the District 8 website are the most recent and up to date watershed maps available by the State. These maps are not true hydrologic datasets following ridgelines and are approximate. The PE should document which hydrologic boundaries are being used for the project. Table 1-1 shows the different boundaries (symbol column) available that have been mapped.

Table 1-1 California System (CalWater 2.2)

Symbol	Description	Approx. Acres	# in CalWater 2.2
HR	Hydrologic Region	8,150,000	10
HU	Hydrologic Units	430,000	190
HA	Hydrologic Areas	156,000	522
HSA	Hydrologic Sub-Areas (vary greatly from 50,000 to >450,000)	125,000	655
SPW	Super Planning Watersheds	50,000	1623
PW	Planning Watersheds	3,000-10,000	6271

1.7. *WEBSITE REFERENCES*

A reference section is included with this guidance with internet and intranet websites. These websites can be used to obtain additional information pertaining to this guidance such as the Construction General Permit, Risk Determination Spreadsheets, and Geotechnical Services contacts.

1.8. *RISK LEVEL DETERMINATION QUESTIONS*

Any questions in regards to the Risk Level determination should be directed to the District/Regional Stormwater Coordinators or the Headquarters Office of Storm Water Management – Design.

1.9. *GOALS WHEN DETERMINING A PROJECT RISK LEVEL*

- It is desirable to have a single Risk Level (RL) for each project.
- It is desirable to have the lowest RL possible. Additional analysis should be pursued if it seems a project will result in a lower RL.
- Planning and scheduling construction during the dry season usually reduces the RL, especially in central and southern California, and may be a cost effective alternative to extensive BMPs and higher monitoring and reporting.

2. PROCEDURES FOR A CONTIGUOUS LINEAR HIGHWAY CONSTRUCTION SITE PROJECT

2.1. *GIS MAP METHOD – EPA RAINFALL EROSIVITY CALCULATOR & GIS MAP*

This method should be used during planning phases of a project when cross section information is not available and a quick analysis is required. This method will produce a higher watershed erosion estimate in tons/acre than the Individual Method.

2.1.1. Determine Sediment Risk

1. Download the Risk Determination Excel spreadsheet from Appendix 1 of CGP at the following URL:
   http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_app_1.xls
   a. Click on the Start tab of the Risk Determination Excel spreadsheet (the spreadsheet should default to this tab when the spreadsheet is first opened).
   b. Click on Step 1 1. GIS Map Method - EPA Rainfall Erosivity Calculator & GIS map (the spreadsheet will automatically go to the Sed – Map Option tab) cell. The figure shown is the product of K and LS. However, this map does not have the planning watersheds and highway systems shown. Caltrans has incorporated the K and LS figure and the planning watershed mapping (see footnote 13 on page 35 of Order for more detail) into the WQPT.

2. Use the following URL to get to Caltrans WQPT.
   http://www.owp.csus.edu/research/stormwater/tools/wqpt.htm
   Use this tool to locate the project's K and LS value for each planning watershed. District 8 has a website (for Caltrans internal use only) that can be used also that includes useful longitude and latitude information. Use these steps when using District 8s website (for Caltrans internal use only) to determine K and LS value.
   a. Use this URL (http://sv08arcgis/CGP2009/) to get to the opening page.
   b. Make sure all the boxes are unchecked except the "Street Map" box. Zoom into project site.
   c. A good way to locate site is if latitude and longitude are known for begin and end centerline stationing. The latitude and longitude are located at the bottom left hand corner of the screen.
   d. Use the plus, minus, and scroll buttons at the upper right hand corner to navigate around screen.
   e. Once the project is located check the "Risk" box and "CalWater_Planning Watershed" box.
   f. Use the "Map Identifier" tool at the upper right hand corner to identify the planning watersheds within the project limits.

g. Uncheck the "Risk" and "CalWater Planning Watershed" box and click on the "EPA EMAP" and "EPA EMAP-KLS" box. This is the KLS value required for each identified watershed. (Another method allowed is to uncheck the "EPA EMAP-KLS" box and check the "EPA-EMAP-K" to obtain k value. Then uncheck box and check the "EPA-EMAP-LS". These values can be used to document the K and LS values separately.)
h. Click on the "plus" button adjacent to the "EPA EMAP-KLS" box. This will identify the color.
i. Click on the "minus" button to close.
j. Document the KLS value for each planning watershed.

3. Go back to the Risk Determination Excel spreadsheet and click on the "1. Sediment Risk" tab located at the bottom of the spreadsheet. Add the K and LS value obtained from Caltrans WQPT (or D8 website) and enter into the "K Value Factor" cell of the spreadsheet. Enter a "1" into the "LS Value Factor" cell. (Or the separate values of K and LS can be input separately shown in step 2g above. This is the method that is used in SMARTS.)

4. Determine R Factor by clicking on the URL located at the top of the Risk Determination Excel spreadsheet ("1. Sediment Risk" tab) or use the following URL. http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm
This is the calculator the Board is requiring Caltrans to use to determine the Rainfall Erosivity Factor (R factor).
    a. Read the entire page and scroll to the bottom.
    b. Click on the "GO" button located at the bottom right corner of the page.
    c. Add the project & planning watershed name and construction period. The start date is the date of initial earth disturbance. Use the Approve Contract milestone date plus estimated number of days until initial earth disturbance. The end date is the date of final site stabilization. Use the Contract Acceptance date. If using other dates, contact the Resident Engineer to determine if language is necessary to be added to the contract documents (e.g., Special Provisions, Order of Work, etc.).
    d. Click on the "Next" button located at the bottom right hand corner.
    e. Determine approximate Latitude and Longitude of mid point of project within each planning watershed within the project limits using D8 website described in Step 2 above or use the following URL (for Caltrans internal use only) for exact Latitude and Longitude conversion.
    http://onramp.dot.ca.gov/hq/gis/applications_branch/applications_tools/applications_tools.shtml
        I. Determine the project's average Post Mile for each planning watershed within the limits of the project.
        II. Input County, Route and Post Mile information
        III. Click on "Convert Lat/Long to PM" tab.
        IV. Write down the Lat/Long's calculated.

f. Go back to the Rainfall Erosivity Calculator for Small Construction Sites
g. Click on the button for **"**Please enter the Latitude/Longitude information of the project/site."
h. Click on the Lat/Long (decimal option).
i. Add the decimal Lat/Long information.
j. Click on the "Next" button at the bottom right hand corner to obtain the "R factor".

5. Go back to the Risk Determination Excel spreadsheet ("1. Sediment Risk" tab) and insert "R Factor Value". A planning watershed erosion estimate is calculated and Site Sediment Risk Factor obtained. See bottom right hand corner of spreadsheet for results. Document each planning watershed Sediment Risk Factor.

2.1.2. Determine Receiving Water Risk

1. Click on "2. Receiving Water Risk" tab of Risk Determination Excel Spreadsheet. Use the following URL to get to Caltrans WQPT. http://www.owp.csus.edu/research/stormwater/tools/wqpt.htm. Use this tool to determine whether a project drains to a sediment-sensitive waterbody for each planning watershed. A sediment-sensitive waterbody is either:
    a. on the most recent 303d list for waterbodies impaired for sediment
    b. has a USEPA-approved Total Maximum Daily Load implementation plan for sediment
    c. has the beneficial uses of COLD, SPAWN, and MIGRATORY

2. Follow these steps when using the WQPT to determine if the watershed is 303d listed or has a USEPA-approved TMDL implementation plan for sediment. Use the above URL to get to the opening page.
    a. Click on the "Post-Miles" tab. Select a County
    b. Click on "GO".
    c. Select the Route.
    d. Select the planning watershed or hydrologic sub-area (depending on information available) within the postmile limits of project.
    e. Choose a postmile that is near the midpoint of the project centerline stationing within the planning watershed.
    f. Scroll down page to "Targeted Design Constituents" (TDC) tab (located on right hand side of page).
    g. Click on this tab and the list will be limited to Caltans TDCs.
    h. Review for 303d list or with a TMDL for sediment.

3. Use these steps when using District 8s website (for Caltrans internal use only) to determine if the watershed is 303d listed or has a USEPA-approved TMDL

implementation plan for sediment. Use this URL (http://sv08arcgis/CGP2009/) to get to the opening page.

a. Make sure all the boxes are unchecked except the "Street Map" box.
b. Zoom into project site. A good way to locate site is if latitude and longitude are known for begin and end centerline stationing. The latitude and longitude are located at the bottom left hand corner of the screen.
c. Use the plus, minus, and scroll buttons at the upper right hand corner to navigate around screen.
d. Once the project is located check the "Risk" box and "CalWater_Planning Watershed" box.
e. Use the "Map Identifier" tool at the upper right hand corner to identify the planning watersheds within the project limits.
f. Uncheck the "CalWater Planning Watershed" box.
g. Click on the "File 303d" box. This is the 303d list impaired for sediment for each identified watershed.
h. Click on the "plus" button adjacent to the File 303d box. This will identify the color.
i. Click on the "minus" button to close. This same concept can be used to identify the USEPA-approved TMDL implementation plan for sediment, which is the "TMDL" box, and the beneficial uses of COLD, SPAWN, and MIGRATORY, which is the "Cold-Migra-Spawn" box.

4. It is recommended to use the State Water Resources Control Board's website (www.swrcb.ca.gov) and review the region's basin plan for COLD, SPAWN, and MIGRATORY beneficial uses. District 8s website (for Caltrans internal use only) can also be used as demonstrated above. This website has useful SWRCB mapping of COLD, SPAWN, and MIGRATORY beneficial uses.

5. A planning watershed that meets at least one of the three criteria (as outlined in step 1 above) has a high receiving water risk. Go back to "2. Receiving Water Risk" tab of Risk Determination Excel Spreadsheet.
   a. Answer question A.1. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed waterbody impaired by sediment?
   b. Answer question A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY?
   c. Insert "yes" or "no" for watershed characteristics. The spreadsheet will determine receiving water risk as either high or low.
   d. Document each planning watershed Receiving Water Risk Factor.

2.1.3. Combined Risk

Click on "3 Combined" tab of Risk Determination Excel Spreadsheet to see project combined RL for each planning watershed. Document each planning watershed Combined RL.

2.1.4. Can the Planning Watershed Combined Risk Level be Reduced?

Yes, there may be an opportunity to reduce the overall Combined Risk Level. Consider revaluating sediment risk by using the Individual Method in Section 2.2. This will reduce the sediment risk factor and possibly reduce the Combined Risk Level of the project.

2.2. *INDIVIDUAL METHOD - EPA RAINFALL EROSIVITY CALCULATOR & INDIVIDUAL DATA*

This method should be used during design phases of a project or when cross section information is available and a detailed analysis is required, which will ultimately reduce the watershed erosion estimate in tons/acre.

2.2.1. Determine Sediment Risk

1. Recalculate the sediment risk by using more refined K and LS values.

2. Use the same R value calculated for each planning watershed from the previous method.

3. Go back to "Start" tab on the Risk Determination spreadsheet.
    a. Click on Step 1 2. Individual Method - EPA Rainfall Erosivity Calculator & Individual Data (the spreadsheet will automatically go to the Sed – Map Option tab) cell.

4. Go to NRCS website for on-line soil surveys (determination of 'K" value). Use the following URL: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.
    a. Click on the WSS green button.
    b. Use the Quick Navigation tool to locate site.
        i. Example – Double click on the Longitude and Latitude box and input values.
        ii. Zoom in and out until project limits are visible on map.
        iii. Click on the AOI by polygon button above the map and draw around the site limits. It may take several tries until desired results are obtainable. (It may be difficult to use this website if the new alignment deviates from the existing highway. If this is the case it may be desirable to download soil mapping and place as a background level in Microstation.)
        iv. Click on Soil Data Explorer tab
        v. and then soil properties and qualities tab.
        vi. Click on Soil Erosion Factors.
        vii. Click on K Factor, Rock Free.
        viii. Click on View Rating tab to see results.

ix. Determine a weighted average based on area for site K Factor.
x. Document each planning watershed K Factor.

5. Go back to "1. Sediment Risk tab on Risk Determination spreadsheet and input K Factor Value for each planning watershed. If difficulty in determining K Factor, consult Geotechnical Services at the following URL: http://onramp.dot.ca.gov/hq/esc/gs/overview.shtml

6. For a consistent statewide method, determine LS Factor Value as follows:
   a. Use the best available data for the phase of project being considered. Typically, use USGS Quad Maps (use only when surveyed data is not available), contour mapping generated from surveyed data, or cross sections developed from surveyed data. Most of the time cross sections should be used for long linear alignment projects.
   b. Designate cross sections uniformly spaced along the alignment. It is recommended to use cross sections spaced approximately every 1,000 feet (a minimum of two to three for a very small project, which can be defined as a quarter mile or less in length). For most projects it is recommended to use five or more cross sections along the construction alignment for each RL determination. The PE must review the locations of each cross section to insure reasonableness. For instance, if one of the locations falls at a bridge location within a creek crossing, the PE should take another representative cross section either side of the bridge location away from the non-standard cross section. Since the cross sections are uniformly spaced, a simple average will provide a weighted average. For statistical reliability, determine a minimum number of cross sections; especially if the topography is variable.

   c. For each cross section, obtain the **existing** hillside slope length (ft) and slope (%) **within the disturbed soil area limits** that are within Caltrans right of way and easements. Typically, one to six hillside slopes should be used to determine an overall length of disturbed area and weighted average slope based on length.

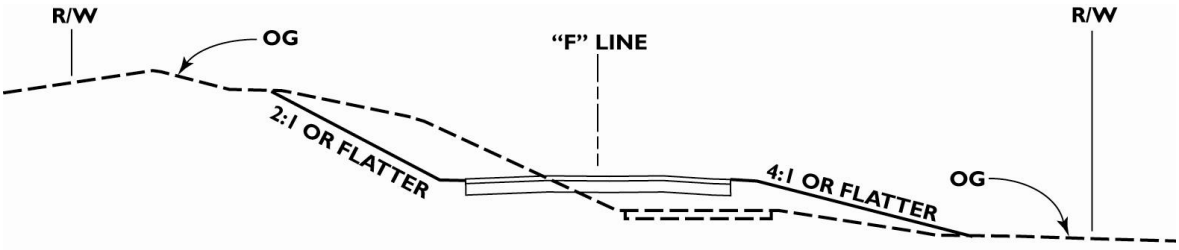


Figure 2-1 Cross Section Sta "F" 171+200

Figure 2-1 Cross Section Sta "F" 171 + 200. Above is a cross section showing the original grade, proposed work, and right of way limits. Anticipated DSA includes cut and fill slopes.

d. Refer to Figure 2-1 for an example of a typical cross section. This cross section at station F 171+200 shows existing ground, proposed shoulders, side slopes, and proposed pavement.

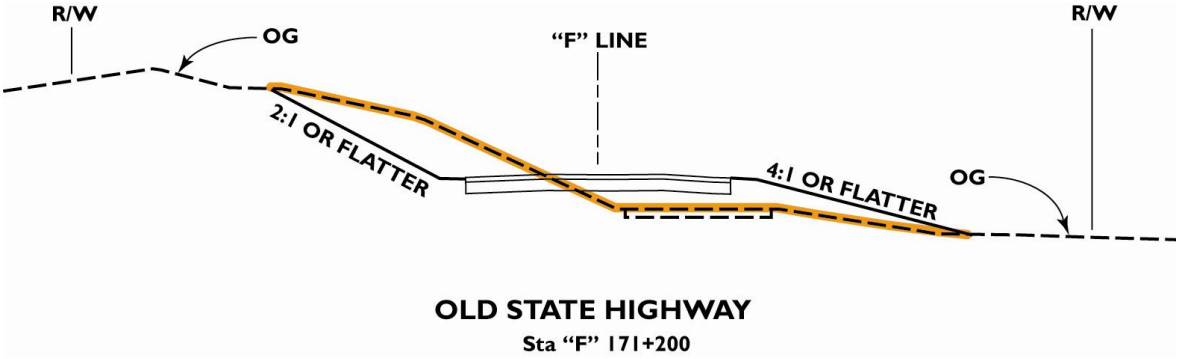


Figure 2-2 Cross Section Showing Existing Slope

Figure 2-2 Cross section showing existing slope. The orange line indicates the existing slopes affected by the proposed work.

e. Figure 2-2 shows the original ground surface associated with the proposed work in orange. Next, divide the existing slope into segments based upon uniform slope steepness as shown in Figure 2-3.

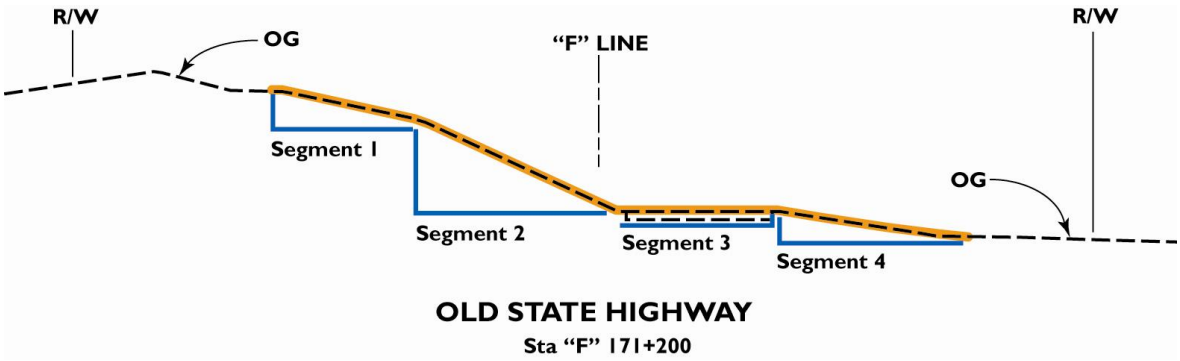
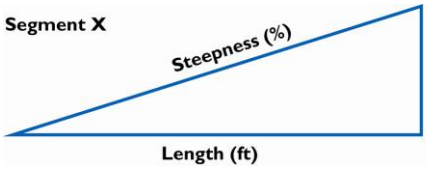


Figure 2-3 Cross Section Showing Four Slope Segments

Figure 2-3 Cross section showing Four Slope Segments. For this cross section, the existing slope can be characterized by four segments. The number of segments will vary per cross section.

Table 2-1 Cross Sectional Slope Characterization



Segment	Length(ft)	Rise(ft)	Steepness(%)	LS
1	16.40	4.26	25.97	1.15
2	22.96	10.49	45.68	2.51
3	18.04	1.31	7.26	0.33
4	22.96	3.61	15.72	0.90

Table 2-1. For each segment, provide the length and rise in feet. If you use the Topography Tool, it will calculate the steepness and LS value.

f. For each cross section, determine an LS factor from the LS Table. Go back to "1. Sediment Risk" tab on the Risk Determination spreadsheet. Click on LS Table (the spreadsheet will automatically go to the LS tab) cell located within the LS Factor section of the spreadsheet to determine the LS Factors.

g. Average all cross section LS factor values to obtain a planning watershed average LS factor.

Table 2-2 LS Table Values

Site Specific Analysis of LS Factor
Project XX-XXXXXX

Planning Level Watershed:

Number of X-Sections = 6

Alignment		Number of	Slope Segment 1				Slope Segment 2				Weighted Average for All segments	
Station	Line	Segments	Length (ft)	Rise (ft)	Steepness (%)	LS	Length (ft)	Rise (ft)	Steepness (%)	LS	Total Slope Length (ft)	Weighted LS
171+ 00	F	1	12.600	3.600	28.57	1.07	0.000	0.000	N/A	0.00	12.600	1.07
171+100	F	2	15.300	4.100	26.80	1.13	16.700	3.500	20.96	0.95	32.000	1.04
171+200	F	4	16.400	4.260	25.98	1.15	22.960	10.490	45.69	2.51	80.720	1.28
171+300	F	4	16.100	3.800	23.60	1.04	20.600	9.200	44.66	2.25	73.900	1.16
171+400	F	3	15.300	4.100	26.80	1.13	16.700	3.500	20.96	0.95	50.400	0.77
171+500	F	1	12.200	3.800	31.15	1.12	0.000	0.000	N/A	0.00	12.200	1.12

Area Weighted LS = **1.07**
(Composite Weigthed LS / Number of X-Sections)

Table 2-2. The slope length, rise, steepness, and LS value are tabulated by cross section. This table was produced using the Topography Tool. Slope Segments 3-6 were omitted for readability.

Note: Several references have been made to the Topography Tool. Briefly:
Purpose: *This tool will assist Caltrans staff in developing a weighted average, by area, for slopes as required for the Construction General Permit's Risk Level Determination, Individual Method.*

Synopsis: *For any given cross section, there will be one or more existing hillside slopes within the disturbed soil area limits of the planned work. For each of these existing slopes, the designer will provide the horizontal slope length (feet) and vertical rise (feet). For each slope, called segments, this Excel Worksheet will use these inputs to calculate slope steepness in percent and return a RUSLE 'LS Value' using the "LS values for Construction Slopes" table from page 7 of Appendix 1 of*

the Construction General Permit. For each cross section, a weighted average for LS is returned based upon slope length dominance (e.g., the longer slopes will dominate the average). Finally, a composite LS for the entire alignment is returned as a simple average of all cross sections.

7. Go back to "1. Sediment Risk" tab on the Risk Determination spreadsheet and input the LS Factor. A planning watershed erosion estimate is calculated and Site Sediment Risk Factor obtained. See bottom right hand corner of spreadsheet for results.
    a. Document each planning watershed Sediment Risk Factor. Compare this Sediment Risk Factor to the original.

8. If the risk has not been reduced, document and go back to "1. Sediment Risk" tab on the Risk Determination spreadsheet.
    a. Click on the Site-specific K factor guidance (the spreadsheet will automatically go to the K tab) cell above located at the bottom of the K Factor section.
    b. The PE must use engineering judgment to decide if obtaining soil samples using this method might reduce the RL.
    c. The PE should document the decision process if not using this method.
    d. OSWM and Geotechnical Services has discussed obtaining site soil samples and agree that few projects should be using this method because the NRCS soil maps in most instances will be reliable.
    e. There may be times where a high K value soil type might be within a significant portion of the project and site soil testing necessary.
    f. Another reason for testing would be if top layers of hillside soils on the project site have been disturbed and NRCS soils may not be the type of soils mapped.
    g. There may be instances where NRCS soil maps are not available. If this is the case, see if soil information has already been collected.
    h. Make sure to only use top soil because this is the soil of concern.
    i. Consult with Geotechnical Services if in doubt when to grab field samples or no previous soil samples available.
    j. Request Caltrans Geotechnical Services to perform a particle size analysis (ASTM D-442) for a representative number of cross section locations within the planning watershed to determine a Soil Erodibility Factor (K) using the nomograph in the Risk Determination spreadsheet. It is recommended to download "K" Value mapping and use as a background drawing to project Layout Sheets in order to determine representative soil sample locations.
    k. Coordinate with Geotechnical Services for soil sample locations, number of samples to be taken, and if areas defined on NRCS maps for each soil type can be used in weighted average area calculation.
    l. An average "K" Value can be calculated using a weighted average based on area.
    m. It should be noted that the **soil-erodibility factor K represents: (1) susceptibility of existing surface material to erosion**, (2) transportability of

the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition.

n. Once the information is determined go back to "1. Sediment Risk" tab on the Risk Determination spreadsheet.
o. input the K Factor for the planning watershed. An erosion estimate is recalculated and Site Sediment Risk Factor obtained. See bottom right hand corner of spreadsheet for results.
p. Document the planning watershed Sediment Risk Factor. Compare this Sediment Risk Factor to the original. If the risk has been reduced, go to step 9.
q. If the risk has not been reduced, the PE should review the K values of the soil samples versus the NRCS K values at the representative locations.
r. If the values are reasonable, stop and document.
s. If not, discuss with Geotechnical Services and document decisions if a Combined RL can be determined with the K values obtained.

9. Click on "3 Combined" tab in the Risk Determination spreadsheet to see project combined RL for the planning watershed. Document the planning watershed Combined RL.

If there is more than one RL determination for multiple planning watersheds, the PE shall notify the District/Regional Storm Water Coordinator. The Regional Water Board may choose to break the project into separate levels of implementation. Early coordination is recommended during the initial planning stages (PID and/or PA/ED) of a project. The Coordinator will decide if coordination with the Regional Water Board is required to determine if the project should be broken into more than one RL.

3. PROCEDURES FOR MULTIPLE CONSTRUCTION SITES (NON-CONTIGUOUS) WITHIN A PROJECT

Caltrans projects vary in type. Some have several locations where construction will occur such as an HOV ramp widening project. The proposed work would consist of widening the existing ramps, installing meters, and modifying the existing drainage system at several locations. This section focuses on these types of projects where construction areas are not contiguous and usually not defined as a Common Plan of Development (refer to PPDG, Appendix G for definition). For more information on non-contiguous projects refer to EPAs Fact Sheet (page 7 of 52, 2nd paragraph) on how to apply to Caltrans projects. http://www.epa.gov/npdes/pubs/cgp2008_finalfactsheet.pdf

3.1. *DISTURBED SOIL AREA*

The Disturbed Soil Area (DSA) for multiple location projects will be calculated for each site and if determined to be one acre or more, a separate RL determination will need to be performed for each location. Each site will be entered into SMARTS as a separate project if one or more acres are disturbed. If less than one acre, no RL determination is required and not required to be entered into SMARTS.

Use Section 2 "Procedures for a Contiguous Linear Highway Construction Site Project" to determine the RL for each site when DSA is one acre or more.

4. REFERENCES

Internet Websites:

- Use the State Water Resources Control Board website to download Construction General Permit.
  http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml
- Review Risk Determination section in CGP Order on pages 34 and 35.
  http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo2009_0009_dwq.pdf
- Review Risk Determination section in CGP Fact Sheet on pages 28 through 30.
  http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf
- Download the Risk Determination Excel spreadsheet from Appendix 1 of CGP.
  http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_app_1.xls
- Use the following URL to get to Caltrans Water Quality Planning Tool.
  http://www.owp.csus.edu/research/stormwater/tools/wqpt.htm
- Rainfall Erosivity Factor (R factor)
  http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm
- NRCS website for on-line soil surveys (determination of 'K" value)
  http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
- Use EPAs Fact Sheet for Common Plan of Development definition of non-contiguous projects. See 2nd paragraph of page 7 of 52)
  http://www.epa.gov/npdes/pubs/cgp2008_finalfactsheet.pdf
- Obtain the most recent version of "Project Risk Level Determination Guidance" and the latest Topography Tool spreadsheet at:
  http://www.dot.ca.gov/hq/oppd/stormwtr/risk-guidance.htm

Caltrans Intranet Websites (Available only to Caltrans Employees):

- Geotechnical Services Contacts
  http://www.dot.ca.gov/hq/esc/geotech/
- District 8s website to determine K and LS value.
  http://sv08arcgis/CGP2009/
- Determine Latitude and Longitude knowing Post Mile
  http://onramp.dot.ca.gov/hq/gis/applications_branch/applications_tools/applications_tools.shtml